

QA: QA

**U. S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE**

AUDIT REPORT USGS-ARC-02-11

OF

U. S. GEOLOGICAL SURVEY

AT

DENVER, COLORADO

JUNE 17-21, 2002

Prepared by: _____ **Date:** _____

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**Ram B. Murthy
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1.0 EXECUTIVE SUMMARY

As a result of Quality Assurance (QA) Audit USGS-ARC-02-11, the audit team determined that the U. S. Geological Survey (USGS) located in Denver, Colorado is satisfactorily and effectively implementing the applicable portions of the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) QA Program in accordance with DOE/RW-0333P, Revision 11, *Quality Assurance Requirements and Description* (QARD), OCRWM program procedures and USGS implementing procedures.

Two Quality Observations (QO) were identified in the areas of Organization and Document Control. Both conditions were corrected during the audit. Briefly, the QOs indicated (1) the need to identify all long-term augmented Federal staff working on Yucca Mountain Project (YMP) related quality activities on the USGS organizational chart; and (2) the need to update a controlled document manual. A recommendation also resulted from this audit as documented in Section 6.0 of this report for USGS management consideration.

In addition, the effectiveness of corrective actions related to seven previously identified Deficiency Reports (DR) and one QO was evaluated with satisfactory results. The details are described in paragraph 5.5.5.

2.0 SCOPE

Auditors representing the DOE's Office of Quality Assurance (OQA) conducted a compliance-based audit to evaluate USGS's implementation of the OCRWM QA Program as described in the QARD and applicable implementing procedures at the USGS facility. An observer representing the DOE OQA observed the audit process.

The audit team, through interviews of cognizant personnel, reviews of documentation, and evaluation of procedures, assessed implementation, adequacy, and effectiveness of USGS implementation of the QA Program.

The audit team also reviewed DR USGS-01-D-105 identified in last year's OQA audit of USGS in addition to recently closed OCRWM deficiency documents of USGS activities to verify completion of corrective actions.

In accordance with the approved audit plan, the following QA Program Sections were evaluated:

- | | |
|---------|---|
| 1.0 | Organization |
| 2.0 | Quality Assurance Program |
| 4.0/7.0 | Procurement Document Control/ Control of Purchased Items and Services |

| | |
|----------------|--|
| 5.0 | Implementing Documents |
| 6.0 | Document Control |
| 12.0 | Control of Measuring and Test Equipment |
| 15.0 | Nonconformances |
| 16.0 | Corrective Action |
| 17.0 | Quality Assurance Records |
| Supplement I | Software |
| Supplement II | Sample Control |
| Supplement III | Scientific Investigation |
| Supplement V | Control of the Electronic Management of Data |
| Appendix C | Monitored Geologic Repository (per QMP 4.01, Revision 10 and applicable QARD Sections) |

The following QA Program Sections were not evaluated, as USGS is currently not implementing them:

| | |
|---------------|--|
| 3.0 | Design Control |
| 8.0 | Identification and Control of Items |
| 9.0 | Control of Special Processes |
| 10.0 | Inspection |
| 11.0 | Test Control |
| 13.0 | Handling, Storage, and Shipping |
| 14.0 | Inspection, Test, and Operating Status |
| 18.0 | Audits |
| Supplement IV | Field Surveying |
| Appendix A | High-Level Waste Form Production |
| Appendix B | Storage and Transportation |

3.0 AUDIT TEAM AND OBSERVERS

The following is a list of audit team members and their assigned areas of responsibility:

| <u>Name/Title/Organization</u> | <u>QA Program Sections</u> |
|---|-----------------------------------|
| Marilyn A. Kavchak, Navarro Quality Services (NQS)/ Audit Team Leader, Las Vegas, NV | 6.0, SI & SV |
| Robert A. Toro, NQS/Audit Team Leader in Training, Las Vegas, NV | 1.0, 2.0 & 17.0 |
| Patrick V. Auer, NQS/Auditor, Las Vegas, NV | 4.0/7.0, 12.0, & App.C |
| John R. Doyle, NQS/Auditor, Las Vegas, NV | 5.0, SII & III |
| James Blaylock, DOE OQA/Auditor, Las Vegas, NV | 15.0 & 16.0 |

Observer

Albert C. Williams, DOE OQA, Las Vegas, NV

4.0 AUDIT TEAM MEETINGS AND PERSONNEL CONTACTED

The pre-audit meeting was held at the USGS facility in Denver, Colorado, on June 17, 2002. An Audit Team/Observer meeting was held daily to review audit progress. Daily debriefings were held, as appropriate, to apprise USGS management and staff of the progress of the audit and identify any conditions adverse to quality. The audit concluded with a post-audit meeting held on June 21, 2002, at the USGS facility.

Personnel contacted during the audit, including those who attended the pre- and post-audit meetings, are listed in Attachment 1, "Personnel Contacted During the Audit."

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Effectiveness

Based on the objective evidence and the sample of information reviewed, the audit team concluded that overall USGS implementation of the OCRWM QA program is adequate and effective. Results for each QA program section evaluated are contained in Attachment 2, "Summary Table of Audit Results."

5.2 Stop Work or Immediate Corrective Actions Taken

There were no stop work orders or immediate corrective actions as a result of the audit.

5.3 QA Program Implementation

Audit team members visited the YMP Site on June 13, 2002. The purpose of the visit was to gather information regarding field implementation activities of selected quality program sections for evaluation during the audit.

Attachment 2, "Summary Table of Audit Results," provides results for each QA program section audited. Details of the audit, including the objective evidence reviewed, are documented in the audit checklist. The checklist is maintained as a QA record.

5.4 Technical Audit Activities

There were no technical activities evaluated during this audit.

5.5 Summary of Deficiencies

Two conditions adverse to quality (CAQ) were identified during the audit resulting in two QOs.

5.5.1 Corrective Action Reports

No Corrective Action Reports were generated during this audit.

5.5.2 Deficiency Reports

No DRs were issued during this audit.

5.5.3 Deficiency Identification and Referrals

No Deficiency Identification and Referrals (DIRs) resulted during this audit.

5.5.4 Quality Observations

Two QOs were identified during the audit. These deficiencies were isolated in nature and required only remedial action.

QO USGS (O)-02-O-050 was noted in the area of Organization (QARD Section 1.0). The current organizational chart for the USGS Yucca Mountain Project Branch did not identify all long-term augmented Federal staff personnel working on YMP-related quality activities.

QO USGS (O)-02-O-051 was identified in the area of Document Control (QARD Section 6.0). USGS Controlled Document Manual Holder #122 contained procedures that were superseded or that were not on controlled distribution and were not marked as required. This manual holder had not maintained the latest controlled procedures in accordance with the USGS controlled document distribution list.

Both conditions were corrected during the audit and are considered closed.

5.5.5 Follow-up of Previously Identified Conditions Adverse to Quality

Seven previously identified DRs and one QO were evaluated for effectiveness of corrective action with satisfactory results.

DR USGS-01-105 - This DR was identified in last year's OQA Audit USGS-ARC-01-11. It was generated to address the inadequate control of Measuring and Test Equipment (M&TE). Review of corrective action implementation for this deficiency was effective.

DR USGS-01-D-005 – This DR noted that M&TE was not uniquely identified, calibration documentation was incomplete, and the M&TE was not on the Master List. This DR was, in part, a subset of USGS-01-D-105 verified for closure during this audit.

DR USGS-01-D-032 – This DR addressed water samples to a vendor for which the Purchase Order (PO) only addressed organic sample testing. The PO was revised to include measurement of water samples; there have been no additional occurrences of this CAQ.

DR USGS-01-D-056 – This DR documented that adequate technical requirements were not included in a USGS PO. There have been no additional occurrences of this CAQ.

DR USGS-01-D-118 – This DR documented that software had not been qualified and baselined in accordance with AP-SI.1Q. No additional examples of this CAQ have been identified.

DR USGS-01-D-119 – This DR documented QA records that had not been submitted to the Records Processing Center. There are no additional occurrences that had not already been identified.

DR YMSCO-01-D-106 – Although this DR was issued and responded to by the Yucca Mountain Site Characterization Office, the issue dealt with self-assessments not being performed by DOE and USGS. USGS had a schedule for Fiscal Year 2002 and had completed six (6) self-assessments at the time of this audit.

QO USGS (B)-02-O-020 – This QO dealt with obliteration of information in a records package. There have been no additional examples of this CAQ.

6.0 RECOMMENDATION

One recommendation was documented for USGS management consideration and entered into CIRS as #2821. It is recommended that USGS Technical Procedure, YMP-USGS-HP-189, Revision 1, be revised to clarify language regarding operator check versus calibration.

7.0 LIST OF ATTACHMENTS

Attachment 1 “Personnel Contacted During the Audit”
Attachment 2 “Summary Table of Audit Results”
Attachment 3 “Acronyms/Abbreviations”

ATTACHMENT 1
Personnel Contacted During the Audit

| Name | Title/Organization | Pre-audit Meeting | Contacted During Audit | Post-audit Meeting |
|------------------------|--|-------------------|------------------------|--------------------|
| Tom Chaney | Chief, USGS/RQST | X | X | X |
| Michael Chornack | Team Chief, USGS/SST | X | X | X |
| Robert Craig | Chief, YMPB | X | X | X |
| John Earle | Hydrologist, USGS/SST | | X | |
| Daniel Gillies | Operations Chief, YMPB | X | | X |
| Joyce Golos | Administrative Officer, USGS/ASG | X | | X |
| Valerie Hall | QA Specialist, EST/OST | X | | |
| Barbara Hersh | QA Procurement Specialist, EST/ASG | X | X | |
| Robert Hommel | Calibration Laboratory Manager (NV Ops), EST/SST | | X | |
| Dan Hudson | Hydrologist, USGS/Nevada Operations | | X | |
| Anne Jhoon-Yen | Senior Records Management Specialist, EST/OST | X | X | X |
| Mark Kurzmack | Hydrologist, EST/SST | X | X | |
| Kate Larsen | Data Support QA Specialist, EST/OST | X | X | |
| Chris Lewis | QA Specialist, USGS/OST | | X | |
| Jackie Losasso | Training Coordinator, EST/ASG | X | X | X |
| Brian Marshall | Hydrologist, USGS/Environmental Science Team | | X | |
| Kelly McCurdy | Records Management Assistant, EST/OST | X | | X |
| Patrick McKinley | Data Coordinator/Hydrologist, USGS | X | X | X |
| Cynthia Miller-Corbett | Quality Engineering/Hydrologist, USGS/RQST | X | X | |
| Richard Moscati | Geologist, USGS/Environmental Science Team | | X | |
| Pamela Motyl | Quality Engineering Specialist, EST/RQST | X | X | X |
| Martha Mustard | Hydrologist, USGS/RQST | X | X | X |
| Thomas Oliver | Hydrologist, EST/Environmental Science Team | | X | |
| James Paces | Geologist, USGS/Environmental Science Team | | X | |
| Bruce Parks | Assistant Chief, YMPB | X | X | X |
| Zell Peterman | Team Chief, USGS/Environmental Science Team | | X | |
| Kevin Scofield | Hydrochemist, EST/Environmental Science Team | | X | |
| Patricia Sheaffer | QA Specialist Group Manager, EST/OST | X | X | |
| Donna Sinks | On-Site Representative, BSC/QA | X | X | X |
| Kenneth Skipper | Manager, Bureau of Reclamation/Engineering Geology | X | X | |
| Connie Sorrel | QA Specialist, EST/OST | X | | |
| Thomas Strauss | Civil Engineer, Bureau of Reclamation/SST | | X | |
| Pat Tucci | Hydrologist, USGS/SST | | X | |
| Joseph Whelan | Geologist, USGS/Environmental Science Team | | X | |

Note: Acronyms shown on this table are defined in Attachment 3 of this report.

ATTACHMENT 2

SUMMARY TABLE OF AUDIT RESULTS

| QARD Sections | Implementing Documents | Checklist Pages | Deficiencies/ DIRs | QO | REC | Program Adequacy | Procedure Compliance | Overall |
|---------------|---|---|--|--|--|---|---|---------|
| 1.0 | DOE/RW-0333P R11 & YMP-USGS-QMP-1.01 R8 | 1 2-4 | NA | QO NA | NA | SAT SAT | SAT SAT | SAT |
| 2.0 | AP-2.1Q R2 AP-2.2Q R1 AP-2.14Q R2 AP-2.17Q R1 AP-2.19Q R0, ICN1 AP-2.21Q R1, BSCN1 AP-2.23Q R0, ICN1 | 5-6 7-8 9-11 12-14 15 16-19 20-21 | NA NA NA NI NA NA NI | NA NA NA NI NA NA NI | NA NA NA NI NA NA NI | SAT SAT SAT NI SAT SAT NI | SAT SAT SAT NI SAT SAT NI | SAT |
| 4.0/7.0 | YMP-USGS-QMP-4.01 R10 YMP-USGS-QMP-4.02 R8 | 22-24 25-27 | NA | NA | NA | SAT SAT | SAT SAT | SAT |
| 5.0 | DOE/RW-0333P R11 YMP-USGS-QMP-5.01 R8 YMP-USGS-QMP-5.03 R11-M1 | 28-30 31-33 34-37 | NA | NA | NA | SAT SAT SAT | SAT SAT SAT | SAT |
| 6.0 | AP-6.1Q R6, ICN4 AP-6.28Q R0, ICN1 | 38-40 41-43 | NA | QO NA | NA | SAT SAT | SAT SAT | SAT |
| 12.0 | AP-12.1Q R0, ICN 2 | 44-50 | NA | NA | REC | SAT | SAT | SAT |
| 15.0 | AP-15.2Q R0, ICN 2 AP-15.3Q R0 | 51-52 53-56 | NA NI | NA NI | NA NI | SAT NI | SAT NI | SAT |
| 16.0 | AP-16.1Q R5 AP-16.4Q R2 | 57-59 60 | NA NI | NA NI | NA NI | SAT NI | SAT NI | SAT |
| 17.0 | AP-17.1Q R2, ICN 2 | 61-63 | NA | NA | NA | SAT | SAT | SAT |
| Supp. I | AP-SI.1Q R3, ICN3 | 64-67 | NA | NA | NA | SAT | SAT | SAT |
| Supp. II | YAP-SII.4Q R2, ICN1 AP-SII.2Q R0, ICN1 YMP-USGS-QMP-8.01 R4-M1 | 68-71 72 73-75 | NA | NA | NA | SAT SAT SAT | SAT SAT SAT | SAT |
| Supp. III | YMP-USGS-QMP-3.07 R6 AP-SIII.1Q R1, ICN1 AP-SIII.2Q R0, ICN3 AP-SIII.3Q R1, ICN1 AP-SIII.7Q R0 AP-SIII.9Q R0, ICN1 AP-3.11Q R3, ICN1 AP-3.15Q R3, ICN2 | 76-77 78-83 84 85-87 88-91 92 93-98 99-103 | NA NA NA NA NI NI NA | NA NA NA NA NI NI NA | NA NA NA NA NI NI NA | SAT SAT SAT SAT NI NI SAT | SAT SAT SAT SAT NI NI SAT | SAT |
| Supp. V | AP-SV.1Q R0, ICN2 | 104-106 | NA | NA | NA | SAT | SAT | SAT |
| App. C | QMP 4.01, R10 and applicable QARD Sections | 107-108 | NA | NA | NA | SAT | SAT | SAT |

Legend: DR = Deficiency Report NA = Not Applicable NI = No Implementation QO = Quality Observation REC = Recommendation SAT = Satisfactory

ATTACHMENT 3

ACRONYMS/ABBREVIATIONS

| | |
|-------|--|
| ASG | Administrative Services Group |
| BSC | Bechtel SAIC Company, LLC |
| CAQ | Condition Adverse to Quality |
| CIRS | Condition Issue/Identification Reporting/Resolution System |
| DIR | Deficiency Identification and Referral |
| DOE | U.S Department of Energy |
| DR | Deficiency Report |
| EST | Epsilon-Stoller Team |
| M&TE | Measuring and Test Equipment |
| NQS | Navarro Quality Services |
| OCRWM | Office of Civilian Radioactive Waste Management |
| OQA | Office of Quality Assurance |
| OST | Operational Support Team |
| PO | Purchase Order |
| QA | Quality Assurance |
| QARD | Quality Assurance Requirements and Description |
| RQST | Regulatory and Quality Support Team |
| SST | Scientific Synthesis Team |
| USGS | U. S. Geological Survey |
| YMP | Yucca Mountain Project |
| YMPB | Yucca Mountain Project Branch |